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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/804,721	03/19/2004	John A. McClure	100564.00014	7501

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EXAMINER	
BROADHEAD, BRIAN J	
ART UNIT	**PAPER NUMBER**
3661	

DATE MAILED: 04/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/804,721	MCCLURE ET AL.	
	Examiner	Art Unit	
	Brian J. Broadhead	3661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 September 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *5-18-05, 3-19-04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 13, 15, and 16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 13 recites adjusting a parallel guidance line from a fixed aim point behind the vehicle to a point including a small increment offset from a current position but there is no discussion of what this means in the specification. Claim 16 recited single button adjustments for fine-tuning but there is no discussion of this in the specification. Claim 15 depends on claim 13 and doesn't comply for the same reason as claim 13.

3. Claims 13, 15, and 16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 13 recites adjusting a parallel guidance line from a fixed aim point behind the vehicle to a point including a small increment offset from a current position but there is no discussion of what this means in the specification. Claim 16 recited

single button adjustments for fine-tuning but there is no discussion of how this works in the specification. Claim 15 depends on claim 13 and doesn't comply for the same reason as claim 13.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claim 21 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claim is directed towards a "data signal" which is a form of energy and not one of the patentable statutory categories.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1 through 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over McClure et al., 6539303, in view of Dickson et al., 6445983.

8. McClure et al. disclose receiving global positioning system (GPS) data including position and velocity information corresponding to at least one of a position, velocity, and course of said vehicle on lines 15-20, on column 4; computing an actual track and a cross track error from said desired swath based on said compensated heading and said position, wherein said position is compared with a selected desired position of said

plurality of desired positions and said compensated heading is compared with a selected desired heading of said plurality of desired headings, calculating a desired radius of curvature to arrive at said desired track with a desired heading, and generating a steering command based on said desired radius of curvature to a steering mechanism, said steering mechanism configured to direct said vehicle on column 6; receiving differential corrections for said GPS data and correcting said GPS data based on said differential corrections on line 47, on column 4; said GPS data includes at least one of carrier phase RTK corrections, a satellite based differential corrections, and ground based differential corrections on lines 50-54, on column 4; utilizing a DGPS system with dual antennae optimized to generate additional accuracy in said GPS data, further including heading data and generating said compensated heading utilizing said GPS data and said heading data and generating a differential corrector with a reference DGPS receiver and transmitting said differential corrector to the vehicle on lines 50-54, on column 4; said calculating includes generating radius of curvature data, based on best fit algorithms from said GPS data including a current position, a heading and a speed to a desired aim point and desired heading, said aim point can be at least one of: on a straight line with parallel guidance; an interpolated point from a point of closest approach to a previously logged, stored or generated curved track; an edge of previously traveled swaths; a data file of track points based on best fit algorithms in figure 7; said generating a steering command includes generating a command to drive a hydraulic or electrically driven steering system of said vehicle based on a difference between said desired curvature to reach an aim point, a current speed of said vehicle

and a rate of turn of said vehicle on lines 35-40, on column 6; and offsetting said desired line direction by proportionally adjusting a parallel guidance line from a fixed aim point behind the vehicle to a point including a small increment offset from a current position in figure 4 and 5; said determination includes a database lookup on lines 11-20, on column 6; and rotating an east and north velocity from the GPS data into along and cross track components is a fancy way of saying the velocity information from GPS is used to control guidance which McClure clearly discloses. McClure et al. do not disclose receiving a yaw rate signal corresponding to a yaw rate of said vehicle; computing a compensated heading for said vehicle based on an integration of said yaw rate signal, said compensated heading comprising a blend of said yaw rate signal with heading information based on said GPS data, wherein said compensated heading is further dynamically calibrated based on said GPS data; said dynamic calibration includes at least one of rate gyro bias error and scale factor error, during operation, and eliminates static initialization. generating a tilt angle for said vehicle based on at least one of a filtered accelerometer signal and roll signal which can be used to generate a cross track correction based on antenna rotation height to correct for slope induced error in said cross track error; offsetting said desired line to match differences in spacing of existing tracks to compensate for spacing errors therein; compensating for features in fields with a step in a nominal spacing of parallel guidance lines by offsetting said desired line to align with a current position; real time determination of slope at a current position and application of a swath width adjustment to optimize real ground coverage to yield correct spacing between swaths and additional ground coverage; said blend

includes combination of said yaw rate signal with said heading information, said yaw rate signal exhibiting high short term accuracy relative to said heading information, while said heading information exhibits high long term accuracy relative to said yaw rate signal; and said blend employs Kalman filtering techniques. Dickson et al. teach receiving a yaw rate signal corresponding to a yaw rate of said vehicle on lines 55-60, on column 2; computing a compensated heading for said vehicle based on an integration of said yaw rate signal, said compensated heading comprising a blend of said yaw rate signal with heading information based on said GPS data, wherein said compensated heading is further dynamically calibrated based on said GPS data on lines 15-42, on column 5; said dynamic calibration includes at least one of rate gyro bias error and scale factor error, during operation, and eliminates static initialization on lines 21-29, on column 6; generating a tilt angle for said vehicle based on at least one of a filtered accelerometer signal and roll signal which can be used to generate a cross track correction based on antenna rotation height to correct for slope induced error in said cross track error on line 44, on column 5 through line 19, on column 6; offsetting said desired line to match differences in spacing of existing tracks to compensate for spacing errors therein on lines 3-8, on column 3; compensating for features in fields with a step in a nominal spacing of parallel guidance lines by offsetting said desired line to align with a current position on lines 12-20, on column 3; real time determination of slope at a current position and application of a swath width adjustment to optimize real ground coverage to yield correct spacing between swaths and additional ground coverage on line 44, on column 5 through line 19, on column 6; said blend includes combination of

said yaw rate signal with said heading information, said yaw rate signal exhibiting high short term accuracy relative to said heading information, while said heading information exhibits high long term accuracy relative to said yaw rate signal on line 15-45, on column 5; and said blend employs Kalman filtering techniques on lines 20-31 on column 5. It would have been obvious to one of ordinary skill in the art at the time the invention was made to sue the teachings of Dickson et al. in the invention of McClure et al. because such modification would provide guidance control results superior to the use of an individual sensor as stated on lines 39-40, on column 2, of Dickson et al.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian J. Broadhead whose telephone number is 571-272-6957. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black can be reached on 571-272-6956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

THOMAS G. BLACK
SUPERVISORY PATENT EXAMINER
GROUP 3600